3(7) SOV/20-128-3-24/58

AUTHORS: Bibilashvili, N. Sh., Zaytseva, A. M., Lapcheva, V. P., Ordzhonikidze, A.A., Sulakvelidze, G. K.

TITLE: On the Influence Exerted by a Variation of the Vertical Wind Component on the Formation of Shower Precipitations and Hail

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 3, pp 521-524 (USSR)

ABSTRACT: Observations made in Transcaucasia and the Caucasus in 1956-1958 on stratocumuli, cumuli, and massy cumuli showed the following: 1) The vertical component of the velocity of currents, determined by radar methods, amounts to 0.1 - 0.3 m/sec for stratocumuli, 5 m/sec for cumuli, and 10-15 m/sec for massy cumuli. Several wind gusts attain velocities of 25 m/sec. The velocity W of vertical currents within the cloud increases with rising altitude up to a maximum, W_m, in the upper part of the cloud, and then decreases rapidly. 2) The temperature of the cumulus during its formation is higher by 0.5-1.0° than the temperature of the surrounding medium at the same altitude. During stabilization and decomposition of the cumulus in the

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upper part, the cloud temperature is lower by 0.5-1.0° than it is in the surrounding medium. 3) In the part before the peak, the cumulus becomes rapidly aqueous. Yet in the lower and medium part, the water content and the spectrum of the water of the water drops vary but little. The size of the drops is given. On the basis of these data, the increasing size of the drops contained in cumuli and massy cumuli, which is due to gravitational coagulation was calculated by a method devised by E. Bowen (Ref 4) and B. V. Kiryukhin. At high velocities of the vertical currents, the drops almost do not increase on the ascending branch of the trajectory. Formulas for the dependence of radius R of the drop on altitude z are written down. The drops are retained in the upper part of the cloud, where velocities are low. The principal increase in the drop or the hailstone occurs in the cloud range near the peak. If the upper part of the cumulus has a temperature higher than that of natural crystallization, then the cloud remains droplike liquid. However, hail occurs, if the temperature of the cloud peak is below that of natural crystallization. The increasing size of the hailstones up to R ~ 2-4 cm

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at W_m from 10 to 20 m/sec, primarily occurs in the cloud part near the peak, i.e. at the origin of the descending branch of the hailstone trajectory . The authors write down a corresponding formula for the size of the hailstone. The time required for an increase in the hailstone largely depends on W_m, and varies between 20 and 70 min. The definite size of the hailstones depends but little on the vertical thickness of the cloud. Completely new results are obtained if the variations in the vertical component of the velocity of air currents with the altitude are taken into account. This permits, among other things, the following conclusions: 1) A large amount of droplike water and hail is piled up in the cloud part near the peak. 2) The influence exerted by surface-active and hygroscopic substances on the upper part of the forming massy cumulus does not offer any positive effect at $W_m > V_k$. V_k denotes the critical velocity. 3) By complete crystallization of the droplike liquid, undercooled fraction which enters

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the cloud, hail may be prevented or at least reduced (thus preventing a gravitation-dependent increase in the hailstones). If place and time of the center formation were known, hail could be prevented with 4 to 10 kg of silver iodide. Since these quantities are unknown, an amount of silver iodide larger by two or three orders is required for hail prevention. There are 3 figures, 1 table, and 4 references, 3 of which are Soviet.

ASSOCIATION: El'brusskaya ekspeditsiya Instituta prikladnoy geofiziki Akademii nauk SSSR
(Elbrus Expedition of the Institute of Applied Geophysics of the Academy of Sciences, USSR)

PRESENTED: May 25, 1959, by I. N. Vekua, Academician

SUBMITTED: April 26, 1959

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S/049/60/000/004/009/018
E032/E514

3.5000

AUTHORS: Bibilashvili, N.Sh., Lapcheva, V.F., Ordzhonikidze, A.A. and Sulakvelidze, G.K.

TITLE: Characteristics of Coagulational Growth of Hailstones, Associated with Changes in the Velocity of Vertical Streams with Altitude

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1960, No.4, pp.585-593

TEXT: Existing theories of precipitation from thick cumulus clouds lead to certain results which are not confirmed by observation. Thus, for example, in order to obtain hailstones having a radius of 2 to 3 cm, cloud thicknesses of 10 to 15 km are required (Ref.1) with constant upward current velocities of the order of 20 to 25 m/sec. The amount of precipitation from hail and shower clouds exceeds the store of moisture in these clouds by a factor of 5-10. These and other results are not confirmed in practice. Studies of cumulus and thick cumulus clouds carried out by the present authors have led to the following results: a) in cumulus and thick cumulus clouds one observes an increase in the velocity of the upward currents with altitude until a certain maximum value

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is reached. Thereafter the velocity begins to decrease. The maximum value of the upward current velocity in developing thick cumulus and storm clouds does not exceed 27 m/sec according to the data obtained in eighteen experiments. The mean maximum velocity is of the order of 7-8 m/sec (Fig.1). A similar distribution of upward current velocities with altitude is also observed in cumulus clouds. The magnitude of the average maximum velocity in cumulus clouds was found to be 3-4 m/sec (average of 40 experiments). Measurements showed that the mean level of maximum velocities for the above types of clouds over the Alazanskaya plane and in the region of El'brus is at 2500-3500 m above the Earth's surface, i.e. in the middle or upper parts of the cloud. b) Microphysical studies showed that in the lower part of a cloud, most of the droplets have radii of 6-10 μ, and the number of particles per cubic centimeter lies between 200 and 1500. The mean liquid water content does not exceed 10^{-6} g/cm^3. Large droplets having a radius of 40-60 μ are also found in the lower part of a cloud. In the middle and the upper parts of a thick cumulus cloud located above the zone of

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maximum vertical velocities, the dimensions of isolated droplets reach 400 - 600 μ and the liquid water content about 2 x 10^{-5} g/cm^3 (data from ten experiments). The accuracy of these measurements was estimated to be about 20 - 30%. c) Radar studies of hail and shower precipitation showed that the precipitation can continue to appear from a single focus for 10 to 20 minutes. Thus, the formation and precipitation of showers and hail is not a prolonged and continuous process. These results are used in the present paper to set up a theory of coagulational growth of cloud droplets forming showers and hailstones. It is shown that the accumulation of large amounts of water in a cloud takes place as a result of a reduction in the velocity of upward currents towards the upper part of a cloud. Thus, favourable conditions are produced for the droplets to come to rest and increase their size. These droplets then grow by coagulation with the smaller drops coming up with the upward stream and thus increase the liquid water content of the upper part of the cloud. Using this scheme it is possible to predict the appearance of hail, the finite dimensions of hailstones and the amount of precipitation.

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The most effective weapon in the fight against hail at the present time is the continuous crystallization of the supercooled part of the cloud. It is, therefore, important to develop studies of microscopic parameters of thick cumulus clouds so that hail centres can be discovered and neutralized. There are 5 figures, 3 tables and 3 references: 1 Soviet, 1 a Russian translation from English and 1 English.

ASSOCIATION: Akademiya nauk SSSR El'brusskaya ekspeditsiya IPG (Academy of Sciences USSR, El'brus Expedition of the Institute of Applied Geophysics)

SUBMITTED: February 25, 1959

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S/169/62/000/008/052/090
E202/E192

AUTHORS: Bibilashvili, N.Sh., Zaytseva, A.M., Kuz'min, Ye.A., Lapcheva, V.F., Ordzhonikidze, A.M., and Sulakvelidze, G.K.

TITLE: Theory of the formation of large drop fractions in the heavy radial cumulo-nimbus clouds, and factors affecting these processes

PERIODICAL: Referativnyy zhurnal, Geofizika, no.8, 1962, 80, abstract 8 B 550. (In the collection: "Issled. oblakov, osadkov i grozovogo elektrichesťva" ('Studies of clouds, precipitations and thunderstorm electricity') M., AN SSSR, 1961, 3-6).

TEXT: Using observational data from the strato-cumulus, cumulus and heavy cumulus clouds in the years 1956-1958 in Trans-Caucasus and Caucasus, the growth of clouds' droplets was calculated according to the method of Bouen and Kiryukhin, in terms of the gravitational coagulation, assuming linear increase of the anabatic velocity w, with respect to the height z.

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As a result of these calculations it was established that with the greater velocities of the vertical streams the drop does almost cease to grow during the anabatic branch of the trajectory. The droplets are retained in the upper part of the cloud, where the velocities are small and the principal growth of the droplets or hailstones occurs prior to reaching the upper portion of the cloud. With the aqueous exchange of 10^{-6} g/cm^3, and the coefficient of catchment of 0.85, the position of the apex of the trajectory depends principally on the height z_1, at which $w = w_{max}$ and the degree of decrease of w with height at which $z > z_1$. With the velocity of the anabatic stream w_{max} greater than the velocity attained by the falling droplet with a radius of 2.5 mm of the v_{cr}, a chain reaction is started which leads to the accumulation of a large quantity of moisture in the upper part of the cloud and to the appearance of intensive showers. A cloud with $w_{max} < v_{cr}$ gives only a very short-duration and weak shower.

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In the case when the temperature of the cloud's top is lower than the temperature of natural crystallisation, hail is formed in the cloud and the size of the falling hail particles is determined by the relation:

$$R \geq 1/8 w_{max}^2 \rho(z) \rho(0),$$

where $\rho(z)$ and $\rho(0)$ are air densities at levels z and y of the Earth's surface. The growth of hail to the size $R \sim 2.4$ cm at $w_{max} \approx 10 - 20$ m/sec occurs substantially above the level w_{max}, at the beginning of the katabatic branch of hail trajectory. The time necessary for the growth of hailstones to the above dimensions depends chiefly on the value of w_{max} and varies within the interval of 20 - 70 min. The terminal dimensions of hailstones depend very little on the vertical thickness of the cloud, and are determined chiefly by the moisture content of the air masses entering the cloud, the height of the zero isotherm, the value and the stability of w_{max}, and also by the velocity gradient of the vertical streams along their height.

Taking into consideration in the calculations the last mentioned, leads to a conclusion that the accumulation of large amounts of droplet water and hail takes place in the zone before the top of the cloud, which explains the high intensity and short duration of the showery precipitates and hail. The pressure of the large droplet fraction in the upper part of the cloud lowers the value of the anabatic velocity of the stream down to v_{cr}, and the corresponding quantity of water holding may be calculated from the formula:

$$q = \frac{m}{2gz} (w_{max}^2 - v_{cr}^2),$$

where m - the mass of air in a unit volume. The action on the upper part of the growing heavy cumulus with $w_{max} > v_{cr}$, with surface active or hygroscopic agents does not give a positive effect. Prevention or even weakening the effect of a hail is possible only by full crystallisation of the supercooled fraction of the liquid droplets entering the upper part of the cloud. 4-10 kg of reagent are required to destroy the hail centre.

Card 4/4 [Abstractor's note: Complete translation.]

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D228/D302

3.5110

AUTHORS: Bartishvili, G. S., Biblashvili, N. Sh., Zaytseva, A. M., Lapcheva, V. F., Ordzhonikidze, A. A. and Sulakvelidze, G. K.

TITLE: The growth of drops and hailstones in thick cumulus cloud with allowance for the change in the velocity of vertical currents with height and the physical bases of the effect on hail processes

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 4, 1962, 19, abstract 4B134 (V sb. Fiz. oblakov i osadkov, v. 2 (5), M., AN SSSR, 1961, 146-148)

TEXT: In the article a method is given for calculating the growth of cloud drops and hail particles at the expense of coagulation processes, and the influence of the character of the change in the velocity of ascending currents on the growth of cloud particles is investigated. The question of calculating the water content of thick cumulus cloud and the amount of precipitation is considered;

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the physical bases of the effects on hail processes are also illuminated. The results, accumulated during the study of mass convective clouds on the El'brus and the Alazani expeditions of 1954-1959 are used as the original experimental material. In conclusion the following deductions are formulated: The accumulation of large water reserves in a cloud in liquid or solid phases occurs as a result of the decreasing velocity of ascending currents with altitude. This creates favorable conditions for the coagulation growth of the largest drops or of soft hail at the expense of the fine-drop liquid fraction, entering from below. A "locking-layer" in which a chain reaction in the watery cloud, or a considerable growth of hail particles, occurs, is formed in the zone of the maximum vertical-current velocity. On the whole the hailstone dimensions depend on the presence in the cloud's middle part of stable and prolonged (not less than 30 - 90 min) vertical currents with speeds of 10 - 25 m/sec, as well as on the height of the zero isotherm, and not on the thickness and the water content on the cloud's lower part. If the zero isotherm is situated at the level of maximum vertical velocities, or below this level, the hailstone sizes are

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largely governed by the vertical flow magnitude. If the zero isotherm is located well above the maximum velocity level, the hailstone dimensions are determined by the velocity magnitude at the zero isotherm level. The radius of a falling hailstone satisfies the following disparity, which is one of the criteria for the likelihood of hail fall:

$$R < \frac{2\omega_o^2 \rho_z}{\rho_o}$$

where ω_o is the ascending current velocity, ρ_o is the air density at a standard pressure, and ρ_z is the air density at a set height. The ascending current velocity also determines the water content of a cloud's upper part, which may reach 20 g/m^3 at the beginning of precipitation. The amount of precipitation from intra-mass cumulus clouds depends, too, on the ascending current velocity. Hail processes cannot be averted by the episodic effect of hygroscopic

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or other substances, which accelerate the gravitational coagulation of drops, upon the upper part of a thick cumulus water-drop cloud. However, the continuous action on the cloud's lower part may be an effective means of combating hail in consequence of the "washing out" of the lower part and the coarsening of the nuclei at its summit. The episodic effect of crystallizing substances on the supercooled part of thick cumulus cloud can lead to the artificial development of hail. In the authors' opinion the most effective way of preventing hail is the full crystallization of the cloud's supercooled part. Questions of the study of the microstructural cloud parameters that are necessary for the advanced detection of hail foci are most pressing at the present time. Questions of the method of introducing active matter into a cloud and of the search for new reagents are also important. [Abstracter's note: Complete translation.]

S/169/62/000/002/039/072
D228/D301

AUTHOR: Bibilashvili, N. Sh.

TITLE: Some aspects of the structure of convection currents in cumulus and thickly-heaped clouds

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 2, 1962, 23, abstract 2B184 (V sb. Fiz. oblakov i osadkov, v. 2 (5), M., AN SSSR, 1961, 187-194)

TEXT: The work is devoted to examining the results of determination of vertical velocities in cumulus and thickly-heaped clouds under conditions of mountainous country (Kakheta Range). The velocity determination was made by means of compensated pilot balloons with inert targets; the positions of the pilot balloons were determined by a radar station. The processing of the resulting data [illegible] that in 70% of the cases the speed of ascending currents in [illegible]ws with altitude up to the middle or subapical part of [illegible] which it begins to diminish; no clearly expressed [illegible] on 15% of the cases. Separate measurements

BIBILASHVILI, N. SH.

Dissertation defended for thedegree of Candidate of Physicomathematical Sciences at the Institute of Applied Geophysics 1962:

"Vertical Flows in Convective Clouds and Their Effect on Formation of Shower Precipitation."

Vest. Akad. Nauk SSSR. No. 4, Moscow, 1963, pages 119-145

SULAKVELIDZE, Georgiy Konstantinovich; BIBILASHVILI, Nodari Shalvovich; LAPCHEVA, Valentina Fedorovna; ZHDANOVA, [illegible], red.

[Formation of precipitation and hail control] Obrazovanie osadkov i vozdeistvie na gradovye protsessy. Leningrad, Gidrometeorizdat, 1965. 264 p. (MIRA 18:12)

BULAVSKIY, G.K., prof.; BIBILASHVILI, N.Sh.; LAPCHEV, [illegible]

Methodology and physical principles of the modification of rain clouds; a review of works carried out at the Algiers Geophysical Institute. Meteor. i gidrol. no.1:45-49 D '65.
(MIRA 19:1)

L 34106-66 EWT(1)/FCC GW
ACC NR: AP6009789 SOURCE CODE: UR/0050/65/000/012/0045/0049

AUTHOR: Sulakvelidze, G. K. (Professor); Bibilashvilp, N. Sh.; Lapcheva, V. F.

ORG: Vysokogornyy Geophysical Institute (Vysokogornyy geofizicheskiy institut)

TITLE: Method and physical principles of influencing hail formation in clouds

SOURCE: Meteorologiya i gidrologiya, no. 12, 1965, 45-49

TOPIC TAGS: hail, cloud formation, cloud physics, atmospheric cloud, weather control research

ABSTRACT: This article is a review of investigations at the Vysokogornyy Geophysical Institute (Vysokogornyy geofizicheskiy institut) concerning processes of the formation of rain and hail, performed between 1956 and 1963. An analysis of the data showed that at the initial stage of development of the convective cloud, the rise of air masses is accomplished as individual thermals. Upon further development of the cloud the number of thermals increases, they merge in the central part, forming an updraft. In large convective clouds, beginning approximately from the cloud base, the velocity of the updraft increases almost linearly with height and reaches a maximal value at about the middle part of the cloud, after which, toward the top of the cloud, the velocity again begins to decrease, also linearly. The maximal value of the updraft velocity is reached in the cumulus-rain

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stage of the development of the cloud and amounts to 25—30 m/sec. The appearance of descending motions in the cloud is associated with the start of precipitation. With the course of time the updrafts are replaced by downdrafts. The change in time of the velocity of the updrafts at the period of maximal development of the cloud is insignificant. On examining the process of the formation of showers falling from convective clouds, a calculation of the change of velocity of the updraft with respect to height led to qualitatively new results. It became possible to explain such important characteristics of the process of the formation and precipitation as the brevity and great intensity of the showers, rainfall from warm clouds, the role of giant crystallization nuclei in the formation of showers, etc. These factors were not fully satisfactorily explained by existing theories. The formation of showers is associated with the coagulation growth of individual large drops formed on giant condensation nuclei. Radar investigations of the process of the formation and falling of showers and hail show that the zone of hail growth is situated in the front of the cloud and usually occupies a much smaller volume than the volume of the cloud itself. The authors describe a method which permits, on the basis of aerial synoptic data, to determine the presence in the atmosphere of favorable conditions for the formation of large convective clouds and the accumulation of large reserves of supercooled moisture needed for the formation and growth of hailstones. The possibility of the accumulation of moisture in a cloud in a supercooled form is determined by the magnitude and character of the energy distribution of vertical atmospheric instability. The changes of stratification of the atmos-

phere as a consequence of advection of air masses and the melting of hailstones upon their falling from the level of the zero isotherm to the earth's surface are taken into account when forecasting hail processes. The method of forecasting hail phenomena was checked under field conditions to prevent hail damage and the method proved to be quite reliable. D. V. Kiryukhin, Docent of Leningrad University, participated in developing the method and physical principles of influencing hail processes. Orig. art. has: 5 formulas and 1 figure.

SUB CODE: 08 / SUBM DATE: none / ORIG REF: 005 / OTH REF: 003

L 09306-67 EWT(1) GW

ACC NR: AT6027421 SOURCE CODE: UR/3213/66/000/003/0154/0163

AUTHOR: Abshayev, M. T.; Bibilashvili, N. Sh.

ORG: none

TITLE: Radar method of determining spectrum and concentration of hail stones in convective clouds

SOURCE: Leningrad. Vysokogornyy geofizicheskiy institut. Trudy, no. 3(5), 1966. Mekhanizm obrazovaniya i vypadeniya grada (Mechanism of the formation and precipitation of hail), 154-163

TOPIC TAGS: cloud physics, hail, meteorologic radar ~~reflection~~

ABSTRACT: The use of the function of hail distribution by size is suggested in order to determine the microstructures of hail clouds, as is the measurement of the radar reflections from the same cloud volume obtained on several wavelengths, depending on the number of distribution parameters involved. The Rokard distribution was used to describe the hail spectrum for purposes of simplicity and to provide an operational method for indicating hail sizes and concentrations. Two radars, operating on different wavelengths, were used to find the calculated concentration and the distribution parameter. The general form of the hail distribution must be used, and measurements must be made on three wavelengths, in order to arrive at a more accurate determination of the hail spectrum in the cloud. An average value on the order of

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ACC NR: AT6027421

$10\ m^{-3}$ was obtained for the hail concentration in the cloud in the interval d_{min}-d_{max}, with d equal to the hail stone diameter. The method requires substantial refinement with respect to making the function of hail distribution in the cloud and the dielectric properties of hail stones, more precise. More work is needed as well to establish the most suitable wavelengths. Orig. art. has: 8 formulas, 3 figures, and 2 tables.

SUB CODE: 04, 17 / SUBM DATE: none / ORIG REF: 008 / OTH REF: 010

ACC NR: AM6012226 (A) Monograph UR/

Sulakvelidze, Georgiy Konstantinovich; Bibilaskvili, Nodari Shalvovich; Lapcheva, Valentina Fedorovna

Formation of precipitation and the effect upon hail processes (Obrazovaniye osadkov i vozdeystviye na gradovyye protsessy), Leningrad, Gidrometeoizdat, 1965, 264 p. illus., biblio. (At head of title: Glavnoye upravleniye gidrometeorologicheskoy sluzhby pri Sovete Ministrov SSSR. Vysokogornyy geofizicheskiy institut) 850 copies printed.

TOPIC TAGS: ~~meteorology~~, cloud formation, hail, storm, meteorologic radar, CLIMATE CENTER

PURPOSE AND COVERAGE: This book presents data from theoretical rainfall and experimental studies of the process of formation and precipitation of from convection clouds, as well as new ideas on the mechanics of hail formation in convection clouds. Methods are shown for radar detection of hail centers and the determination of the size of hail within convection clouds. The book gives the method of control of hail processes developed from 1960-1962 and used in 1963 for the protection of agricultural crops against damagee by hail. The results of these studies are given as well as an outline of their organization.

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ACC NR: AM6012226

SUB CODE: 04 /SUBM DATE: 18Sep65/ORIG REF: 076/OTH REF: 047

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L 17544-65 EWP(e)/EWT(m)/EWA(d)/EPR/EWP(k)/EWP(b)/EWP(t) Pf-4/Ps-4 IJP(c)/ ASD(m)-3/ESD/AS(mp)-2 JD/WB

ACCESSION NR: AP4049604 S/0076/64/038/011/2614/2625

AUTHOR: Petrov, Yu. I. (Moscow); Bibilashvili, R. Sh. (Moscow)

TITLE: Liberation of gaseous products in the oxidation of aluminum and the structural transformations of its oxide film 18 27 B

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 11, 1964, 2614-2625

TOPIC TAGS: oxidation kinetics, aerosol aluminum powder, Colson Russel effect, x ray analysis, stable aluminum hydroxide, lattice constant, crystalline modification, aluminum oxide, aluminum suboxide

ABSTRACT: The oxidation kinetics of an aerosol aluminum powder in air and in rarefied dry oxygen have been studied at 360--600°C by two independent (gravimetric and chemical analysis) methods. The oxidation reaction has been found to give rise to volatile compounds, presumably of the type of Al_2O suboxides, which may be responsible for the appearance of the Colson-Russel effect (exposure of a photoemulsion in oxidation of metals). The large specific area of the powder with mean particle diameter of $1.6 \cdot 10^{-5}$ cm made it possible to follow by X-ray analysis the structural changes of the oxide film on the aluminum surface under varying condi-

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tions of treatment and storage of the specimens. It has been shown that the primary film formed at room temperature is amorphous and has the composition $Al_2O_3 \cdot 2H_2O$. By heating the powder in air and in vacuum to temperatures $\leq 480°C$ the oxide is transformed into the hydroxide AlOOH, stable up to 600°C. Subsequent heating in vacuum up to 800°C is accompanied by complete loss of water with conversion of the AlOOH to γ-Al_2O_3. The high-temperature modification of the oxide film is decomposed at room temperature under the action of moisture with the reversible formation at $Al_2O_3 \cdot 2H_2O$, which in contrast to the initial amorphous state is definitely crystalline. The nature of the transformations of the oxide has been found to depend on the aluminum content in the particles, and on the other hand the state of the film affects the lattice constants of the metal, stretching it at room temperature with a force of $\sim$6000 atm. in the case of the crystalline modification of the oxide. Of the three aluminum atoms entering into the oxidation reaction, one is removed by the volatile substances (yield 0.33). In rarefied dry oxygen (10^{-1}, $2 \cdot 10^{-2}$ mm Hg) the yield is diminished to 0.1. Almost complete cessation of gaseous product evolution (yield 0.01) is observed in a mixture of oxygen (10^{-1} mm Hg) with argon (20 mm Hg). Orig. art. has: 10 figures and 9 tables.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205220012-7"

L 17544-65

ACCESSION NR: AP4049604

ASSOCIATION: Institut khimicheskoy fiziki, AN SSSR (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 26Oct63 ENCL: 00 SUB CODE: IC, NM

NO REF SOV: 012 OTHER: 008

3/3

LERNER, E.N.; BIBILEYSHVILI, Sh.I.; LAPITSKIY, M.A.

Electric activity of the brain in experimental intracerebral hematomas and in thermocoagulation of cerebral vessels. Zhur. nevr. i psikh. 64 no. 12:1792-1798 '64. (MIRA 18:1)

1. Kafedra nervnykh bolezney (zaveduyushchiy - prof. N.S. Chetverikov) TSentral'nogo instituta usovershenstvovaniya vrachey, Moskva.

MARGOLIS, Ye.I.; BIBILEYSHVILI, V.N.

Microdetermination of carbon and hydrogen in bromine-containing organic compounds. Vest.Mosk.un.Ser.2:Khim. 18 no.2:46-48 Mr-Ap '63. (MIRA 16:5)

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(Carbon--Analysis) (Hydrogen--Analysis)
(Bromo-derivatives (Organic chemistry))

BIBILEYSHVILI, Z.A.

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1. Institut akusherstva i ginekologii (dir. - prof. Sh.M.Koridze) Ministerstva zdravookhraneniya Gruzinskoy SSR i laboratoriya toksoplazmoza (zav. - doktor biologicheskikh nauk D.N. Zasukhin) Instituta eksperimental'noy meditsiny imeni Gamalei AMN SSSR, Moskva.

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Change in the quantity of microelements and the activity of some enzymes in the blood of women. Soob. AN Gruz. SSR 39 no.3:583-589 S '65. (MIRA 18:10)

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BUBILO, A.

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BIELIÓ, A.

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Waters emanating from melting snow from the higher grounds along a surface almost completely frozen, and saturate the snow accumulated in ditches, on fields and in other places, thus forming large heat accumulators incapable, without further heating, of evacuating the waters, but remaining in a state of unstable equilibrium. A relatively insignificant access of heat causes a violent discharge of waters, eventually resulting in a substantial swelling of surface waters, at an infinitesimal rate of infiltration into the soil. With a view to remedying this situation, it is suggested that a number of mechanical processes be undertaken by means of either bulldozers or scrapers to cause the soil in the higher regions to gradually thaw, stratum by stratum, ahead of the actual snow melting period. This will result in increased infiltration, on the spot, of waters from the melting snow, and slow down the rate of melting. Mechanical processes to facilitate the drainage of waters are suggested for localities situated at lower levels, and in all cases in which the accumulation of moisture in the soil is undesirable. The phe-

nomenon of stagnancy in masses of sleet and snow saturated with water and in a state of unstable thermal equilibrium will be curtailed by such measures, thus reducing the number of extrusions of violent liberation of such masses and, consequently, the frequency of the disastrous swelling of flood waters.

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(Electric transformers) (Fluorescent lamps)

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L 43562-65

ACCESSION NR: AP5012958 PO/0022/64/000/010/0273/0277 14 B

AUTHOR: Bibillo, Aleksander (Engineer)

TITLE: Some factors influencing the design concepts of power supply equipment for central communications offices of the Polish railroad system

SOURCE: Przeglad telekomunikacyjny, no. 10, 1964, 273-277

TOPIC TAGS: electric power engineering, electric power production, electric distribution equipment, railway engineering, railway equipment, railway network, communication system

Abstract: The article discusses the essential factors which have governed the design of power supply equipment for the railroad communications system. The earlier trends were toward centralization, extension of the power capacity and increased efficiency. Next, efforts were made to reduce capital investment sunk into storage batteries and subsequently the partial or complete elimination of the latter. A Swiss scheme is considered which provides an inertial type of energy storage by means of a heavy flywheel mounted on an axle coupled to the engine-generator set. A combination of storage batteries with electro-mechanical converters was tried in the

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L 43562-65

ACCESSION NR: AP5012958

Soviet Union. Four possible schemes are proposed which would fit in best with the technological and economical conditions prevailing in Poland now. All but one are based on utilizing the Diesel-Electric set only for energy storage; they all include line power supply, switchgear, voltage stabilization and automatic interlock and annunciation. Orig. art. has 4 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: EE, EC

NO REF SOV: 000 OTHER: 000 JPRS

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L 32...

L 32906-66
ACC NR: AP6023804

here and possible solutions are described in more detail), 7) permissible short interruptions in supply. This latter problem is tied in with reliability, the causes and effects of such interruptions are analyzed and the characteristics of types of outages are compared. Certain conclusions are drawn therefore as to the most effective means of reducing interruptions in remote power supply. Orig. art. has: 3 figures and 5 tables. [JPRS]

SUB CODE: 13, 10 / SUBM DATE: none

Card 2/2

BIBILLO, Aleksander (Warszawa)

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"Vacuum Method for Removing Zinc from Brass. D. N. Klushin, I. A. Bibina, and K. G. Rogatina (*Zhur. Prikl. Khim.*, 1955, 28, (11), 1242–1248).—[In Russian.] [illegible] investigated the vacuum desincing of 70–80 brass, 90–95% Cu, a silicon brass (Cu 79·6, Zn 10·2, Si 3·2, Pb 0·6, Sn 0·2%), and a leaded brass (Cu 82·9, Zn 14·0, Pb 2·0, Sn 0·2%), at 0·3–0·5 mm. Hg and temp. of 1150°–1200° C., and for periods of 3–180 min. The results are tabulated and shown graphically. The max. loss of Zn occurred in the first 20–30 min.; further removal was very slow, 98·0–99·0% of the Zn could be removed, leaving a residual content of 0·6–0·2% in the Cu, which was suitable for making bronze. The condensate contained 95–99% Zn, plus some Cu and Pb, and was suitable for use in hot-dip galvanizing or for preparing brass. 45–50% of the Pb appeared in the condensate.—O. V. E. T.

BIBINA, I.A.; VETRENKO, Ye.A.; DIYEV, N.P.; YELISEYEV, I.S.; KLUSHIN, D.N.; KUSAKIN, P.S.

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(Copper--Metallurgy) (Bessemer process)

BIBINA, N.M., inzh.; TOMAYEVA, N.I., inzh.; SHPIRO, G.S., kand.tekhn.nauk

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BIBINEYSHVILI, M B

USSR/Medicine - Scarlet fever FD-2301

Card 1/1 Pub 148 - 2/36

Author : Kvitashvili, G. V.; Elizbarashvili, L. N.; Bibineyshvili, M. V.; Zedaniya, G. M.

Title : The clinical and epidemiological characteristics of scarlet fever on the basis of data collected at a clinic of infectious diseases during 1931-1947

Periodical : Zhur. mikro. epid. i immun. No 2, 10-13, Feb 1955

Abstract : Outline the clinical and epidemiological aspects of scarlet fever in Tbilissi during 1931-47, considering infection with this disease as a single, uninterrupted epidemiological process extending over 14 years. State that the average lethality from scarlet fever during this period was 8.9% and that the causative factor of the disease became milder, i.e. produced a less severe form of the infection towards the end of the period. One graph.

Institution : Clinic of Infectious Diseases, Tbilissi Medical Institute

Submitted : August 10, 1953.

BIBINEYSHVILI, M.B.; BOTSVADZE, E.V.

Rare case of gangrene of the lower extremity following measles.
Pediatriia no.8:60-61 Ag '57. (MIRA 10:12)

1. Iz kafedry infektsionnykh zabolevaniy (zav. - prof. G.V. Kvitashvili) Tbilisskogo meditsinskogo instituta.
(GANGRENE) (MEASLES)

BIBINOV, S.A.
IVANOV, G.D.

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Tashkentskaya konferentsiya po mirnomu ispol'zovaniyu atomnoy energii, Tashkent, 1959.

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Transactions of the Tashkent (Cont.) SOV/5410

Candidate of Physics and Mathematics; Ya. Kh. Turakulov, Doctor of Biological Sciences. Ed.: R. I. Khamidov; Tech. Ed.: A. G. Babakhanova.

PURPOSE : The publication is intended for scientific workers and specialists employed in enterprises where radioactive isotopes and nuclear radiation are used for research in chemical, geological, and technological fields.

COVERAGE: This collection of 133 articles represents the second volume of the Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy. The individual articles deal with a wide range of problems in the field of nuclear radiation, including: production and chemical analysis of radioactive isotopes; investigation of the kinetics of chemical reactions by means of isotopes; application of spectral analysis for the manufacturing of radioactive preparations; radioactive methods for determining the content of elements in the rocks; and an analysis of methods for obtaining pure substances. Certain

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instruments used, such as automatic regulators, flowmeters, level gauges, and high-sensitivity gamma-relays, are described. No personalities are mentioned. References follow individual articles.

TABLE OF CONTENTS:

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